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Neutrophilic Infiltration of the Myocardium in a Patient With Myelodysplastic Syndrome

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A 64-year-old woman presented with cardiomegaly, Sweet's syndrome, and refractory anemia (RA), and died of sudden cardiac arrest. The autopsy revealed a perivascular and myocardial infiltration by neutrophils, which could be responsible for the cardiomegaly and probably had caused disturbances in the conduction system leading to sudden cardiac arrest. Myocardial infiltration by functionally defective neutrophils can develop in a patient with myelodysplastic syndrome (MDS) without peripheral neutrophilia or leukemic blood picture and needs a special diagnostic and therapeutic consideration. Am. J. Hematol. 58:337–338, 1998. © 1998 Wiley-Liss, Inc.

Key words: MDS; cardiomegaly; neutrophilic infiltration

INTRODUCTION

Myelodysplastic syndromes (MDS) are a heterogeneous group of stem cell disorder characterized by peripheral cytopenias. Most symptoms of the patients with MDS are related to cytopenias and include anemia, infection, and bleeding tendency [1]. Interestingly, functionally defective neutrophils of patients with MDS can invade skin without peripheral neutrophilia or a leukemic blood picture, and produce a clinical condition known as acute febrile neutrophilic dermatosis (Sweet's syndrome) [2,3]. Cohen et al. reviewed extracutaneous involvement in Sweet's syndrome associated with hematologic malignancies and, as far as MDS-associated Sweet's syndrome is concerned, they found only one biopsy-proven lung involvement [4].

In the present report, unusual myocardial infiltration by neutrophils in a patient with MDS who had cardiomegaly as well as Sweet's syndrome at presentation and died of sudden cardiac arrest is described.

CASE REPORT

A 64-year-old Japanese woman without a significant past medical history was admitted on July 1, 1996, because of chest pain, shortness of breath, and fever. Physical examination revealed a friction rub on auscultation and pretibial pitting edema. Chest X ray revealed an enlarged cardiac silhouette with a CTR of 60%. Electrocardiogram was unremarkable. Echocardiography showed a clinically negligible amount of pericardial effusion and a slightly dilated left ventricle. The patient was diagnosed as having pericarditis and congestive heart failure. Her leukocyte count was 2.6×10^9/l without circulating blasts. The erythrocyte count was 2.43×10^{12}/l with hemoglobin of 7.8 g/dL and hematocrit of 23.6%. The platelet count was 119×10^9/l. Her bone marrow was hypercellular with increased megakaryopoiesis and trilineage dysplasia. The percentage of immature blasts was 4.0%. Cytogenetic analysis revealed abnormal karyotype with [46,XX,del(5)(q?),−18,add(21)(q22),+mar1] in 70% of the cells analysed. A diagnosis of refractory anemia (RA) was made according to the criteria of the French-American-British classification [5]. Biochemistry data were unremarkable except for an elevated CRP level of 4.1 mg/dl. Repeated blood cultures were negative. Serological tests for viruses were unremarkable. Quantitation of β-D-glucan was within the normal range. A movable, tender, erythematous, cutaneous nodule of 1.5 × 1.5 cm at the inner aspect of the right lower leg was noted. Excisional biopsy of the nodule led to the diagnosis of acute febrile neutrophilic dermatosis. Her symptoms along with elevated CRP showed waning and wax-

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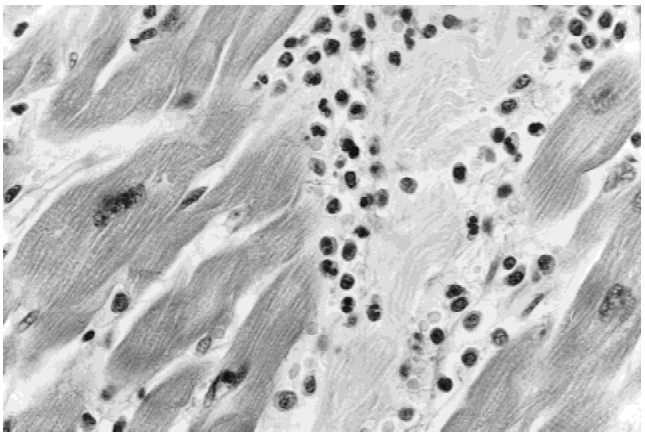

Fig. 1. Neutrophils invading myocardium. Original magnification ×400.

ing regardless of antibiotic therapy. The second bone marrow examination in September revealed a hypercellular marrow with myeloblasts of 6.8%. The patient's MDS seemed to have evolved to RAEB (RA with excess of blasts). The chromosome study showed 100% abnormal karyotype: [46,XX,del(5)(q?),−18,add(21)(q22), +mar] in 85% of the cells analysed, and additional abnormalities in the remaining cells. Prednisolone 30 mg/day was added to the antibiotic therapy but didn't alter the cyclic febrile episodes. On November 29, her leukocyte count was 6.3×10^9/l with 2% immature blasts, hemoglobin 9.2 g/dl, and the platelet count was 74×10^9/l. The patient died suddenly of cardiac arrest 3 days later.

POSTMORTEM FINDINGS

The heart was huge and weighed 730 g. The left ventricular wall was 1.2 cm thick. The pericardial cavity contained 80 ml of clear, pale, yellowish fluid. The pericardium had diffuse thickening with adhesions. The coronary arteries appeared normal. Microscopically there was a marked fibrinous exudate as well as a perivascular and myocardical infiltration by neutrophils (Fig. 1). No bacteria or fungi were identified. Infiltration by neutrophils was noted in the section of the right atrium as well. Patchy neutrophilic infiltration was also found in the lung parenchyma and peribronchial tissue. Bone marrow was hyperplastic and was compatible with the previous diagnosis of MDS (RAEB). Pathologic diagnosis of the heart was fibrinous pericarditis and myocarditis with myocardial hypertrophy.

DISCUSSION

The patient had cardiomegaly and Sweet's syndrome when her hematological data were interpreted as RA. The autopsy disclosed a myocardial and perivascular infiltration by neutrophils, which could explain the cardiomegaly. Neutrophilic infiltration in the right atrium could have caused disturbances in the conduction system and probably contributed to the sudden cardiac arrest. The presence of cardiomegaly along with acute febrile neutrophilic dermatosis (Sweet's syndrome) noted in July would, therefore, support the presumption that neutrophilic infiltration in the myocardium could have developed when the patient's MDS was at the stage of RA. Accordingly, if a patient with MDS has unexplained cardiomegaly in association with Sweet's syndrome as depicted in this patient, biopsy of the heart should be considered to rule out early systemic involvement by neutrophils even though hematologic data are those of RA. The recommended treatment of Sweet's syndrome, corticosteroids, was given but had no effect on her symptoms. Although the treatment of RA has been supportive of cytopenias, some sort of cytoreductive therapy might have given relief to this patient.

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